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构建以Th17应答为主致气道中性粒细胞增高的小鼠哮喘模型:

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Title: Establishment of Th17-mediated allergic asthma mouse model with increased neutrophils around airways

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关键词: [哮喘](#); [动物模型](#); [Th17应答](#); [气道炎症](#); [中性粒细胞](#)

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摘要: 目的 建立一种Th17应答增强致气道炎症以中性粒细胞浸润为主的哮喘动物模型。方法 卵蛋白(ovalbumin, OVA)和内毒素(lipopolysaccharide, LPS)联合致敏构建新哮喘模型。末次激发24 h后行肺功能测定,评估气道高反应性(airway hyperresponsiveness, AHR)。肺泡灌洗液(bronchoalveolar lavage fluid, BALF)分类计数气道炎症细胞比例,肺组织切片HE染色观察病理改变。Q-PCR检测肺组织Th1、Th2和Th17细胞偏移情况。结果 OVA和LPS联合致敏可以诱发更剧烈的AHR。BALF分类计数显示嗜酸性粒细胞(EOS)和中性粒细胞(NEU)比例分别为(16.09±4.42)%和(28.63±8.89)%。病理学观察可见明显的哮喘样炎症改变。Q-PCR结果显示单独OVA致敏肺内T细胞主要向Th2方向偏移,联合致敏以向Th17方向偏移为主。结论 成功构建以Th17应答占优势、肺内炎症以中性粒细胞浸润为主的哮喘动物模型。

Abstract: Objective To establish a Th17-mediated allergic asthma mouse model with increased neutrophils around airways. Methods Ovalbumin (OVA) and lipopolysaccharide (LPS) were applied for sensitization to establish the new allergic asthma mouse model. Airway hyperresponsiveness (AHR) was evaluated at 24 h after the last airway challenge. The subtypes and numbers of inflammatory cells in bronchoalveolar lavage fluid (BALF) were counted. The pathological

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changes of lung tissues were observed by HE staining. Q-PCR was applied to detect the shift of Th1, Th2 and Th17 cells in lung tissues. Results OVA and LPS combined sensitization induced strong AHR response. Neutrophils ($28.63 \pm 8.89\%$) and eosinophils ($16.09 \pm 4.42\%$) were the main subtypes of inflammatory cells in BALF, and the lung tissues presented obvious asthmatic pathological changes. Q-PCR results indicated that naive T cells mainly shifted to Th2 cells when the mice were sensitized by OVA alone, while those mainly shifted to Th17 cells when the mice were sensitized by OVA combined with LPS.

Conclusion The Th17-mediated allergic asthma mouse model with neutrophils as major inflammatory cells around airways was successfully established.

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